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Gas separation process

Description of Technology: This invention relates to gas separation processes using a Li-rho zeolite, in particular to an air separation process where the Li-rho zeolite is an oxygen selective adsorbent.

Patent Listing:

1. **US Patent No. 7,169,212**, Issued January 30, 2007, "Gas separation process"
http://patft.uspto.gov/netacgi/nph-Parser?Sect2=PTO1&Sect2=HITOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&d=PALL&RefSrch=yes&Query=PN%2F7169212

Market Potential: The main method of production of nitrogen and oxygen, two of the largest volume chemicals, is by cryogenic distillation of air. During the past three decades, air separation systems based on selective adsorption of nitrogen or oxygen have been commercialized, especially for smaller volume uses. A commonly used adsorption method for producing nitrogen from air is pressure swing adsorption (PSA). The feed to this process is typically air but may be nitrogen enriched air. Typically, it is a two bed process operating with a fairly simple cycle that includes pressurization, product withdrawal at high pressure, pressure equalization of the beds and depressurization. Other steps such as a product purge may be used. The total cycle time is on the order of minutes. The high pressure is typically 4 to 8 atmospheres and depressurization is typically to atmospheric pressure though vacuum could be employed.

PSA air separation processes make use of relatively simple equipment and provide easy maintenance when compared to cryogenic processes. Some drawbacks of PSA processes are lower product recovery and higher energy consumption than the cryogenic processes. Also, the high cost of currently available adsorbents and the product variability are major problems. Thus, there is a need for processes utilizing better adsorbents.

Benefits:

- Less expensive absorbents
- Greater product recovery than processes in previous arts
- Lower energy consumption

Applications:

- Gas separation

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